

$x = \pm \sqrt{2}$ $\Rightarrow D_f = (-\infty, -\sqrt{2}) \cup (\sqrt{2}, +\infty)$ ✓
 (الف) $x^2 - x - 9 = (x - \sqrt{2})(x + \sqrt{2})$ $x = \sqrt{2}$ $x = -\sqrt{2}$
 $x^2 - 12x^2 + 4x^2 = 0 \Rightarrow x^2(1 - 12 + 4) = 0 \Rightarrow x^2(-8) = 0 \Rightarrow x = 0$

ب) $x^2 - 2x - 5 = 0 \Rightarrow x = 1 \pm \sqrt{6}$
 جمع ضرایب متغیری شود
 برای $x = 1 + \sqrt{6}$ و $x = 1 - \sqrt{6}$ جمع ضرایب متغیری برابر است
 $x^2 - 2x - 5 = 0 \Rightarrow x = 1 \pm \sqrt{6}$
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(ای) $[x] - 2 > 0 \Rightarrow [x] > 2 \Rightarrow D_f: (-\infty, -2] \cup [2, +\infty)$ ✓
 ب) $[x]^2 - 2[x] - 3 \neq 0 \Rightarrow ([x] - 3)([x] + 1) = 0$
 $[x] \neq 3$ $[x] \neq -1$ $D_f: (-\infty, -1) \cup [0, 3) \cup [5, +\infty)$ ✓

$x \neq [x, 5)$ $x \neq [-1, 0)$

(ای) $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1 \Rightarrow x \neq k\pi - \frac{\pi}{4}$
 $\cos x \neq 0 \Rightarrow x \neq k\pi + \frac{\pi}{2}$
 $\sin x \neq 0 \Rightarrow x \neq k\pi$
 $D_f = \mathbb{R} - \{k\pi \in \mathbb{R} \mid k \in \mathbb{Z}\} \cup \{k\pi + \frac{\pi}{2} \in \mathbb{R} \mid k \in \mathbb{Z}\} \cup \{k\pi - \frac{\pi}{4} \in \mathbb{R} \mid k \in \mathbb{Z}\}$

ب) $1 - \sin^2 x > 0 \Rightarrow \sin^2 x < 1 \Rightarrow \sin x < 1$ $\Rightarrow D_f = \mathbb{R} - \{k\pi \in \mathbb{R} \mid k \in \mathbb{Z}\}$ ✓

(ای) $x - 1 > 0 \Rightarrow x > 1$
 ب) $x^2 - 2x - 5 = 0 \Rightarrow x = 1 \pm \sqrt{6}$
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$$x^2 + y^2 - 4x + 6y + 12 = 0$$

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$$x^2 - 4x + y^2 + 6y + k = 0$$

$$\Rightarrow K = 11 \checkmark$$

$$(\sqrt{2}x - b)^2 + (y + 2)^2 = y^2 + 6y + 9 \Rightarrow x^2 - 4x + 1 + y^2 + 6y + 9 = 0$$

$$x^2 - 4x + 1 + y^2 + 6y + 9 = 0 \Rightarrow x^2 - 4x + 1 = 0 \Rightarrow x = 2 \pm \sqrt{3} \Rightarrow t = \sqrt{2} \Rightarrow t = \sqrt{2} \Rightarrow t = \sqrt{2}$$

$$x^2 + 4x \begin{cases} \text{if } a = x \\ a^2 + 4a = 4a + a^2 \\ a^2 + a - 2 = 0 \end{cases} \Rightarrow a_1 = 1 \checkmark$$

$$a > 0$$

$$(a+2)(a-1) \Rightarrow a_2 = -2 \text{ غلط}$$

$$\Rightarrow x = 1 \begin{cases} 1+4 = 5 = f(1) \\ 2+4 = 6 = f(2) \end{cases} \checkmark$$

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$$|n+1| \geq 2 \Rightarrow n+1 \geq 2 \Rightarrow n \geq 1$$

$$n+1 \leq -2 \Rightarrow n \leq -3$$

$$-3 \leq n \leq -1$$

$$\text{if } n = -2 \Rightarrow 18 - b = a - 6 \Rightarrow a + b = 24 \checkmark$$

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$$n \geq \frac{a}{4}$$

$$(n-a) > 0 \xrightarrow{n=2} 12-a > 0 \Rightarrow 12 > a$$

$$b-2a > 0 \xrightarrow{n=2} b > 4$$

$$n \leq \frac{b}{2}$$

$$\frac{a}{4} \leq n \leq \frac{b}{2} \rightarrow \frac{a}{4} = \frac{b}{2} = 2 \begin{cases} a = 12 \\ b = 4 \end{cases}$$

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$$\begin{cases} x^2 + 4x + 4 < 0 \\ x > 0 \end{cases} \Rightarrow x < -2 \quad \begin{cases} x < 2 \\ x > -1 \end{cases} \Rightarrow [-2, 2] - \{-2\}$$

$$|x-2| \neq 0 \Rightarrow x \neq 2 \quad x+1 \geq 0 \Rightarrow x \geq -1$$

$$\begin{cases} [x] - 4 > 0 \Rightarrow [x] > 4 \Rightarrow x \geq 5 \quad I \\ 2 - [x] > 0 \Rightarrow 2 > [x] \Rightarrow x \leq 2 \quad II \end{cases} \Rightarrow I \cap II = \emptyset \checkmark$$

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